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10/673,893	09/29/2003	Mohammad Hossein Zarrabizadeh	24.	1988

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Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

EXAMINER

AZARIAN, SEYED H

ART UNIT	PAPER NUMBER
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2624

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/673,893	Applicant(s) ZARRABIZADEH, MOHAMMAD HOSSEIN	
	Examiner Seyed Azarian	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26,27 and 31-34 is/are allowed.
- 6) ☒ Claim(s) 1-5,7-14,16,17,20-22,24,25 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 6,15,18,19 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/29/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

RESPONSE TO AMENDMENT

1. Applicant's amendment filed, 8/21/2007, see page 11 through page 14 of the remarks, With respect to the rejection of claims 1-25 have been Fully considered but they are moot in view of the new ground (s) of rejection is necessitated by applicant's amendment is made in view of Reed et al (U.S. 7,072,487).

2. Applicant argues in essence regarding claim 1 that Reed (patent 996) fails to teach "watermark without changing its luminance".

Contrary to the applicant's assertion, limitations in the "amended claim", the Examiner would like to point out that, even if the background of application discloses, "inserts the watermarking signal on the chrominance component of the video signal rather than on its luminance signal" (which may effect the luminance or may not), but amended limitation "watermark without changing its luminance", which applicant relies is not explicitly stated in the specification as originally filed. Instead (page 15, paragraph 2 of specification discloses, in step 305, the total of the **variance of the luminance** for each individual pixel within the block, which is, of course, proportional to the average variance of the luminance for the block, is computed).

Examiner is using the new reference supplied with this action: Reed et al (U.S. 7,072,487) discloses (column 1, lines 51-58, present invention, "during the watermark reading operation, the changes in the color values of each pixel "are not projected onto a luminance" axis or onto a particular color axis").

However Reed (996) does not explicitly state watermark mark without changing its luminance". Reed (996) does state a lookup table, which can be used to select a color region for inserting a watermark, when combined with Reed (487) where the color values of each pixel are not projected onto a luminance axis. It provides a method of inserting a watermark using a lookup table into the chrominance pixel portion without projecting it onto the luminance axis, thus the luminance would not be changed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-14, 16-17, 20-22, 24-25 and 28-30, are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al (U.S. patent 6,590,996) in view of Reed et al (U.S. 7,072,487).

Regarding claim 1, Reed (patent 996) discloses a method for selecting a chrominance portion of a pixel to be watermarked, said selecting step employing a perception-based table that indicates for each of at least a plurality of possible pixels in a colors space which, if any, of the chrominance portions should be selected for watermarking (column 1, lines 30-57, the inventions relates to selective color masking of images, for mapping a change in an image attribute such as luminance or chrominance

to a change in color components such as that the change is less visible. The mapping process may be implemented with a look up table, where the image sample color values are used to look up a corresponding change in color values. For image s represented as an array of color vectors (color triplets like red, green blue or cyan, magenta and yellow), the look up table may be implemented as a multidimensional look up table with color vectors used to index a corresponding change in the color values of image samples. Also column 2, lines 35-38, it enables the user to **select** the color region by selecting pixels having the desired color in the image to be watermark).

Reed et al (U.S. 7,072,487) discloses (column 1, lines 51-58, present invention, "during the watermark reading operation, the changes in the color values of each pixel are not projected onto a "luminance" axis or onto a particular color axis").

However Reed (996) does state a lookup table which can be used to select a color region for inserting a watermark, but does not explicitly state watermark mark without changing its luminance". On the other hand Reed et al (U.S. 7,072,487) discloses (column 1, lines 51-58, present invention, "during the watermark reading operation, the changes in the color values of each pixel are not projected onto a "luminance" axis or onto a particular color axis"). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Reed (patent 996) invention according to the teaching of Reed (patent 487), when combined with Reed (487) where the color values of each pixel are not projected onto a luminance axis to provides a method of inserting a watermark using a lookup table into the

chrominance pixel portion without projecting it onto the luminance axis, thus the luminance would not be changed.

Regarding claim 2, Reed discloses the invention as defined in claim 1 wherein said perception-based table indicates for each entry therein whether to watermark only a first chrominance portion or only a second chrominance portion (column 5, lines 42-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transfer the input image into a target color space, and then proceed with the embedding process in that color space).

Regarding claim 3, Reed discloses the invention as defined in claim 1 wherein said perception-based table indicates for each entry therein whether to watermark a first chrominance portion, a second chrominance portion, or not to watermark at all (column 7, lines 1-19, the value of the checksum or parity. Of course, if the signal already corresponds to the desire message bit value, it need not be altered. The same approach can be extended to a set of signal sample where some attribute of the set is adjusted as necessary to encode a desire message symbol. These techniques can be applied to signal samples in a transform domain or samples in the temporal or spatial dominos).

Regarding claim 4, Reed discloses the invention as defined in claim 1 wherein said perception-based table is in computer readable form (column 32, lines 48-60, refer

to computer-readable, also column 34, lines 50-56, computed and stored in a look up table).

Regarding claim 5, Reed discloses the invention as defined in claim 1 wherein said perception-based table divides an entire color space into regions, at least one of said possible pixels within each said region, and said perception-based table supplies an indication for said pixel based on which region of said perception-based table said pixel falls (column 34, lines 2-9, selectively controlling strength of a watermark in certain color region. The following description proposes a framework for selective color masking of a watermark).

Regarding claim 7, Reed discloses the invention as defined in claim 1 wherein said pixel is part of a digital video bit stream represented in YUV format, and wherein said selecting step is performed using only said YUV formatted digital bit stream directly and no other version of said digital bit stream formatted in any other format (see claim 6, also column 5, lines 48-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transform the input image into a target color space, and then proceed with the embedding process in that color space).

Regarding claim 8, Reed discloses the invention as defined in claim 1 wherein said pixel is part of a digital video bit stream represented using a first color space type representation, and wherein, said selecting step is performed using only a digital bit stream formatted in said first color space type representation directly and other color

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space type representation (column 5, lines 48-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transform the input image into a target color space, and then proceed with the embedding process in that color space).

Regarding claim 9, Reed discloses the invention as defined in claim 1 wherein said pixel is a decimated pixel derived from an original digital video bit stream (column 6, lines 61 through column 7, line 25, combining the water mark with input signal are termed non-linear, such as processes that employ dither modulation, modify least significant bits, or apply quantization (decimated) index modulation, further quantization index modulation techniques employ a set of quantizers).

Regarding claim 10, Reed discloses the invention as defined in claim 1 wherein said pixel is a decimated pixel derived from an original digital video bit stream represented in YUV format (column 5, lines 48-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transform the input image into a target color space, and then proceed with the embedding process in that color space).

Regarding claim 11, Reed discloses the invention as defined in claim 1 wherein said pixel is a quantized pixel derived from an original digital video bit stream (column 6, lines 61 through column 7, line 25, combining the water mark with input signal are termed non-linear, such as processes that employ dither modulation, modify least

significant bits, or apply quantization (decimated) index modulation, further quantization index modulation techniques employ a set of quantizers).

Regarding claim 12, Reed discloses the invention as defined in claim 1 wherein said pixel is a quantized pixel derived from an original digital video bit stream represented in YUV format (column 5, lines 48-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transform the input image into a target color space, and then proceed with the embedding process in that color space).

Regarding claim 13, Reed discloses the invention as defined in claim 1 wherein said perception-based table contains information to indicate which, if any, of the chrominance portions should be selected for watermarking for each pixel value of the entirety of said color space (column 5, lines 48-54, color image are represented as an array of color vectors in a color space, such as RGB or YUV. The watermark may be embedded in one or more of the color components of an image. In some implementations, the embedded may transform the input image into a target color space, and then proceed with the embedding process in that color space, also column 37, lines 51-62, mapping described in this section may be implemented in a look up table or in a mathematical function evaluated during encoding or decoding operations).

Regarding claim 16, Reed discloses the invention as defined in claim 1 wherein a chrominance portion of said pixel is watermarked by having its value changed to represent the conveyance of additional data other than the original value of said

chrominance portion (see Fig. 2, column 8, lines 43-56, in addition to the information conveyed in the message, the embedded may also add control bit values (signature bits) to the message to assist in verifying the accuracy of a read operation).

Regarding claim 17, Reed discloses apparatus for supplying an indication as to which chrominance portion of a pixel of a video signal, if any, is better suited to be altered so as to carry additional watermark information, said apparatus comprising a perception-based table in a computer readable media for at least a portion of the possible pixel color space, said table specifying for pixels that are within said portion of said color space the chrominance portion to be indicated by said apparatus (see claim 1, and column 8, lines 43-56, in addition to the information conveyed in the message, the embedded may also add control bit values (signature bits) to the message to assist in verifying the accuracy of a read operation, also column 29, line 66 through column 30, line 26).

Regarding claim 29 Reed discloses apparatus for selecting a chrominance portion of a pixel of an image of a video signal to be watermarked by adding thereto additional information, said apparatus comprising a perception-based table in a computer readable medium that is independent of (i) said image and (ii) said additional information and which indicates for each of at least a plurality of possible pixels in at least a portion of color space which, if any, of the chrominance portions would be. Least likely to introduce a visible artifact should watermark data be added thereto (see claim 1, also Fig. 8, column 17, lines 10-21, refer to gain controller and column 10, lines 35-46, reduce visibility of artifact).

With regard to claims 14 and 20, the arguments analogous to those presented above for claims 1, 2, 8 and 16 are respectively applicable to claims 14, 15 and 20.

With regard to claims 21, 22 and 24, the arguments analogous to those presented above for claims 1, 4, 17 and 19 are respectively applicable to claims 21, 22, 23 and 24.

With regard to claims 25, 28 and 30, the arguments analogous to those presented above for claims 1, 2, 17 and 19 are respectively applicable to claims 21, 22, 23 and 24.

Allowable Subject Matter

5. Claims 6, 15, 18, 19 and 23 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

REASONS FOR ALLABLECLAIMS

6. The following is an examiner's statement of reasons for allowable claims.

With respect to claims 26 representative of claims 27 and 31-34, the closest prior art of record (Reed, 996) and Reed, 487) reference, do not teach or suggest, among other things, " selecting at most one chrominance portion of a pixel of an image of a video signal to be watermarked by adding thereto additional information, selecting step employing a perception-based table that is independent of (i) said image and (ii) said additional information, said table indicating for each of at least a plurality of possible pixels in a color space which one, if any, of the chrominance portion of said plurality of

pixels in colorspace should be selected, to have said additional information added thereto".

These key features in combination with the other features of the claimed invention are neither taught nor suggested by (Reed, 996 and Reed, 487) prior art of record.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Azarian whose telephone number is (571) 272-

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7443. The examiner can normally be reached on Monday through Thursday from 6:00 a.m. to 7:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR.

Status information about the PAIR system, see [http:// pair-direct.uspto.gov](http://pair-direct.uspto.gov). Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seyed Azarian
Patent Examiner
Group Art Unit 2624
November 5, 2007


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